REMARKS

In the Final Office Action, the Examiner noted that claims 1-38 are pending in the application, that claims 1-7 and 9-38 stand rejected and that claims 8 and 15 are objected to. The Examiner further noted that claim 8 would be allowable if written in independent form including all of the limitations of the base claim and any intervening claims. By this response, claims 1, 14, 15 and 19 are amended to more clearly define the Applicant's invention and to correct for informalities pointed out by the Examiner and not in response to prior art. All other claims continue unamended.

In view of the amendments presented above and the following discussion, the Applicant respectfully submits that none of the claims now pending in the application are anticipated under the provisions of 35 U.S.C. § 102 or obvious under the provisions of 35 U.S.C. § 103. Furthermore, the Applicant also submits that all of these claims now satisfy the requirements of 35 U.S.C. § 112. Thus, the Applicant believes that all of these claims are now in allowable form.

Objections

A. Drawings

The Examiner has objected to FIG. 1 noting that FIG. 1 should be designated by a legend such as --Prior Art—because only that which is old is illustrated.

In response, the Applicant has submitted an amended/corrected and replacement FIG. 1 with a legend designating -- Prior Art.

Having made this change, the Applicant respectfully submits that the basis for the Examiner's objection of FIG. 1 has been removed. As such, the Applicant respectfully requests that the Examiner's objection to FIG. 1 be withdrawn.

B. Claims

The Examiner has objected to claim 15 noting that claim 15 is objected to because the phrase "optical powers measured in (e)" should read "optical powers measured in (f)".

In response, the Applicant has amended claim 15 to correct the informality pointed out by the Examiner. Having made this change, the Applicant respectfully submits that the basis for the Examiner's objection of claim 15 has been removed. As such, the Applicant respectfully requests that the Examiner's objection to claim 15 be withdrawn.

Rejections

A. 35 U.S.C. § 112

The Examiner rejected claim 14 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the Applicant regards as the invention. The Examiner noted that it is not clear if the Applicant intended to disclose the options for the one desired property as one specific property or one of two alternative properties.

In response the Applicant has amended claim 14 to correct for the informality and confusion pointed out by the Examiner. Specifically, the Applicant has amended claim 14 to claim that "the desired properties obtained in (g) are the polarization state and an optical power of the optical signal."

Having made the changes described above, the Applicant respectfully submits that claim 14, as it now stands, is definite and hence fully satisfies the requirements of 35 U.S.C. § 112, second paragraph, and is patentable thereunder.

B. 35 U.S.C. § 102

The Examiner rejected claims 19-21 under 35 U.S.C. 102(e) as being anticipated by the Erdogan et al. patent (U. S. Patent 6,211,957, hereinafter "Erdogan"). The rejection is respectfully traversed.

The Examiner alleges that regarding claim 19, Erdogan discloses an apparatus for polarization measurement comprising a polarization controller and a polarizer (fig. 6, element 62, col. 4, lines 48-50 and col. 10, lines 52-56) as in

the Applicant's claims 19-21, where the quarter-wave plate is inherently a polarization controller. The Examiner further alleges that Erdogan teaches a wavelength dispersive element and a photo-detector as in the Applicant's claims 19-21. The Applicant respectfully disagrees.

is a [illegible], additional items are not precluded

"Anticipation requires the presence in a single prior art reference disclosure of <u>each and every element of the claimed invention</u>, <u>arranged</u> as in the claim" (<u>Lindemann Maschinenfabrik GmbH v. American Hoist & Derrik Co.</u>, 730 F.2d 1452, 221 USPQ 481, 485 (Fed. Cir. 1983)) (emphasis added).

The Applicant respectfully submits that Erdogan does not teach, suggest or disclose each and every element of the Applicant's claimed invention arranged as in the claims. More specifically, Erdogan fails to teach, suggest or disclose at least the Applicant's invention of claim 19, which specifically recites:

> "An apparatus for polarization measurement, comprising:
> a polarization controller adapted to receive an optical signal and perform defined polarization transformations of the received optical signal;
> a polarizer adapted to receive the optical signal exiting the polarization controller and define a polarization axis for the received optical signal;
> a wavelength dispersive element for separating the optical signal exiting the polarizer into a plurality of spectral components; and
> a photo-detector for detecting the plurality of spectral components."

It is evident from at least claim 19 recited above that the Applicant's invention is directed at least in part to an apparatus for polarization measurement wherein a polarizer receives an optical signal from a polarization controller, wherein the polarization controller and the polarizer comprise separate components. More specifically, in the invention of the Applicant, at least with regard to claim 19, an optical signal undergoes defined polarization transformations in a polarization controller. The optical signal is then communicated to the linear polarizer, which is set at a fixed orientation, to define a polarization axis for the exiting optical signal. In support of at least claim 19, the Applicant in the specification, specifically recites:

"The polarization controller 202 is used to perform defined polarization transformations of an incoming optical signal 250. Different types of polarization controllers 202 may be used to practice various embodiments of the invention, including mechanical, electro-mechanical and electro-optical devices. In general, mechanical devices tend to be slow compared to electro-optical ones. Therefore, electro-optical polarization controllers, e.g., lithium niobate-based devices, are preferable because they allow polarization state transformation to be performed at relatively high speeds, e.g., on the order of MHz.

In one embodiment, the polarizer 204 is a linear polarizer, and is selected to operate within a wavelength region of the optical signal 250." (See Specification, page 6, lines 5-19).

"Referring to FIG. 2, the dispersed spectral components (λ_i, λ_j, ...) of the optical signal 250, which are separated spatially as a function of wavelength, are detected by a photo-detector 208. In one embodiment, the photo-detector 208 is a photodiode array, which comprises a series of pixels for detecting the dispersed spectral components (λ_i, λ_j, ...) of the optical signal 250. One example of the photodiode array 208 is an optical channel monitor, which can be used for wavelength, power and optical signal to noise ratio (OSNR) measurements." (See Specification, page 7, lines 21-30).

"At step 403, the polarization controller 202 is set to a first position, and the optical signal is converted from its arbitrary polarization state to a transformed polarization state PC1.

At step 405, the optical signal is directed to the linear polarizer 204, which is set at a fixed orientation to define a polarization axis for the exiting optical signal." (See Specification, page 11, lines 22-30).

"Similar optical power measurements are subsequently performed, as shown in step 411, with the polarization controller 202 set to at least three other positions, each of which is different from the first position and from each other. In general, many different combinations of four positions may be used for the polarization controller 202 in performing the polarization measurement according to the method of the invention. For example, one possible combination of four settings of the polarization controller 202 may consist of launching a signal with transverse electric (TE) mode into the polarization controller 202. The polarization controller 202 may be set sequentially to produce four output or transformed polarization states. If one uses a Poincare sphere representation of Stokes vectors for describing the polarization states of the signal, then these four transformed polarization states should preferably have maximum spacings from each other on the Poincare sphere -- e.g., forming a tetrahedron." (See Specification, page 13, line 17, through page 14, line 2).

In the invention of the Applicant, the polarization controller is set to at least four positions and a detector array is used to measure the optical powers of the spectral components. In contrast to at least the Applicant's claim 19, Erdogan specifically recites:

> "An arrangement for directly measuring the out-coupling from an exemplary grating within a polarimeter of the present invention is illustrated in FIG. 6. A single-frequency, tunable laser source 60 provides the input signal used for measurement purposes. A following polarization controlling arrangement 62 including a quarter-wave plate 64, polarizer 66 and half-wave plate 68 is used to obtain predetermined states of polarization to be incident on the grating being tested. In particular, quarter-wave plate 64 and polarizer 66 are adjusted to produce maximum available power in a linearly polarized state. Half-wave plate 68 is then rotated to orient the linear polarized light along a desired direction." (See Erdogan, col. 10, lines 48-59).

In the invention of Erdogan, a polarization controlling arrangement including a quarter-wave plate, polarizer and half-wave plate is used to obtain predetermined states of polarization to be incident on the grating being tested. Specifically, the quarter-wave plate and the polarizer are adjusted to produce maximum available power in a linearly polarized state. Subsequently, the optical signal is communicated to an included grating and detectors are positioned at different locations to detect the diffracted light of the grating. Several detectors are used to detect the output of the grating at different angles. In contrast to the invention of the Applicant, Erdogan does not teach, suggest or make obvious "a polarization controller adapted to receive an optical signal and perform defined polarization transformations of the received optical signal" as taught and claimed by at least the Applicant's claim 19. More specifically, in the invention of the Applicant, only a single detector array is necessary because the polarization controller transforms the polarization of an input optical signal and the polarizer defines a polarization axis for the various polarization states set by the polarization controller, such that a single detector array may be used for detecting the plurality of spectral components.

In contrast, in Erdogan, a polarization controlling arrangement does not transform the polarization of an input optical signal to at least four different states such that, in combination with a polarizer, a single detector array may be used to perform the necessary polarization measurements of the present invention. Instead, in Erdogan, a quarter-wave plate and polarizer are adjusted to produce maximum available power in a linearly polarized state and a half-wave plate is then rotated to orient the linear polarized light along a desired direction. The optical signal is then communicated to an include grating which diffracts the incident optical signal in different directions according to polarization states wherein various detectors detect respective portions of the diffracted optical signal. As such, the Applicant submits that there is absolutely no teaching, suggestion or description in Erdogan for at least "a polarization controller adapted to receive an optical signal and perform defined polarization transformations of the received optical signal" as taught and claimed by at leas the Applicant's claim 19.

For at least the reasons stated above, the Applicant respectfully submits that Erdogan does not teach, suggest or disclose the invention of the Applicant, at least with respect to claim 19.

Therefore, the Applicant respectfully submits that claim 19 is not anticipated by the teachings of Erdogan and, as such, fully satisfies the requirements of 35 U.S.C. § 102 and is patentable thereunder.

Furthermore, dependent claims 20-21 depend directly from claim 19 and recite additional features therefor. As such and for at least the reasons set forth above, the Applicant submits that claims 20-21 are also not anticipated by the teachings of Erdogan. Therefore, the Applicant submits that claims 20-21 also fully satisfy the requirements of 35 U.S.C. § 102 and are patentable thereunder.

The Applicant reserves the right to establish the patentability of each of the claims individually in subsequent prosecution.

C. 35 U.S.C. § 102

The Examiner rejected claims 25-27 under 35 U.S.C. 102(e) as being anticipated by Moeller (U. S. Published Patent Application 09/298,296). The rejection is respectfully traversed.

The Examiner alleges that regarding claim 25, Moeller discloses a system for determining polarization mode dispersion in a transmission system, comprising all of the aspects of the Applicant's claim 25. The Applicant respectfully disagrees.

"Anticipation requires the presence in a single prior art reference disclosure of each and every element of the claimed invention, arranged as in the claim" (Lindemann Maschinenfabrik GmbH v. American Hoist & Derrik Co., 730 F.2d 1452, 221 USPQ 481, 485 (Fed. Cir. 1983)) (emphasis added).

The Applicant respectfully submits that Moeller does not teach, suggest or disclose each and every element of the Applicant's claimed invention arranged as in the claims. More specifically, Moeller fails to teach, suggest or disclose at least the Applicant's invention of claim 25, which specifically recites:

> "A method of determining a polarization mode dispersion in a transmission system, comprising:
>
> (a) propagating a data signal characterized by a wavelength range through an optical fiber in the transmission system; and
>
> (b) determining the polarization mode dispersion in the optical fiber concurrent with (a) by:
>
> (b1) directing a portion of the data signal into a polarization analyzer;
>
> (b2) measuring optical powers for the portion of the data signal as a function of wavelength within the wavelength range; and
>
> (b3) generating polarization parameters from the optical powers measured in (b2)."

It is evident from at least claim 25 recited above that the Applicant's invention is directed at least in part to a method for measurement of polarization mode dispersion wherein optical powers for the portion of a data signal are measured as a function of wavelength within a wavelength range, and polarization parameters are generated from the optical powers measured. More specifically, in the invention of the Applicant, at least with regard to claim 19,

different transmitters are used to generate light at different wavelengths for data transmission. The carrier signals are modulated by respective data bit streams to form data signals having different carrier wavelengths, which are combined in a multiplexer to form a single optical signal. In support of at least claim 25, the Applicant in the specification, specifically recites:

> "In the WDM transmission system 500, different transmitters (TX1, TX2, ..., TXN) are used to generate light (or optical carrier) at different wavelengths for data transmission. The carrier signals are modulated by respective data bit streams to form data signals DS1, DS2, ..., DXN. These data signals DS1, DS2, ..., DXN, having different carrier wavelengths are combined in a multiplexer 510 to form a single optical signal 580." (See Specification, page 19, lines 18-25).
>
> "The PMD compensator 516 is connected at its output 522 to a demultiplexer 524 for separating the transmitted signal 580b into its respective channel components DS1, DS2, ..., and DSN. The optical signals of the respective channels are detected by a number of receivers RX1, RX2, ..., RXN." (See Specification, page 20, lines 21-26).
>
> "To determine the PMD of the transmission fiber 512, it is necessary to perform polarization measurements for at least two different and non-orthogonal polarization states of the optical signal 580 launched into the transmission fiber 512. For example, with the polarization switch 502 set at a first orientation, a first set of polarization measurements may be performed according to steps such as those outlined in FIG. 4. Subsequently, a second set of polarization measurements is performed with the polarization switch 502 set at a second orientation, e.g., about 45° with respect to the first position." (See Specification, page 21, line 19-30).

The Applicant respectfully submits that there is absolutely no teaching, suggestion or disclosure in Moeller for a method of measuring polarization mode dispersion including "measuring optical powers for the portion of the data signal as a function of wavelength within the wavelength range" and "generating polarization parameters from the optical powers measured" as taught and claimed in at least the Applicant's claim 25.

In contrast to the Applicant's claim 25, Moeller specifically recites:

> In FIG. 1, a transmitter (Tx) 102 corresponds to any suitable transmitting device, e.g., a laser diode capable of producing an optical signal 190, which acts as a data or transmission signal. The optical signal

190 from the transmitter 102 is usually characterized by a central wavelength, and is typically linearly polarized. The transmitter 102 is connected to a transmission medium, e.g., a single-mode polarization maintaining fiber (PMF) 104. (See Moeller, paragraph 0020).

The output 113 of the PMD compensator 112 is connected to a receiver 114 for receiving optical signals transmitted through the system 100. Typically, the polarization monitor 140 and the PMD compensator 112 are located in close proximity to the receiver (Rx) 114 to allow accurate PMD compensation for the data signal 190b arriving at the receiver 114. In an alternative embodiment, the polarization monitor 140 may be connected to the output 113 of the PMD compensator 112--e.g., the output 113 may be split into two portions (not shown in FIG. 1), with one portion directed to the polarization monitor 140, and another portion to the receiver 114. In general, embodiments of the polarization monitor 140 of the present invention can be used in conjunction with any PMD compensator 112.

The polarization switch 120 and the polarization monitor 140, which collectively form a PMD monitor 142, are used to provide real-time, on-line PMD measurements for the transmission fiber 108. Since the signal source used for PMD measurement is provided by the transmission or data signal 190 (as opposed to an external signal source), embodiments of the invention allow PMD measurements to be performed concurrent with data transmission in the transmission system 100.

Results of these measurements are provided as input data to the computer or microprocessor 160, which then computes relevant parameters for the adjustment of the PMD compensator 112. Alternatively, based on results of the PMD measurements, PMD compensation parameters may also be retrieved from a look-up table that may be stored in the computer 160. These parameters are communicated to the controller 150 which then adjusts the PMD compensator 112, such that the optical signal 190b arriving at the receiver 114 is compensated for any pulse distortion due to PMD (including higher orders) in the transmission system 100. (See Moeller, paragraph 22 through paragraph 24).

In the invention of Moeller, a single channel PMD monitor is taught. There is absolutely no teaching, suggestion or disclosure in Moeller for a method of measuring polarization mode dispersion including "measuring optical powers for the portion of the data signal as a function of wavelength within the wavelength range" and "generating polarization parameters from the optical powers measured" as taught and claimed in at least the Applicant's claim 25. As such and for at least the reasons stated above, the Applicant respectfully submits that

multiple channel
not taught

Moeller does not teach, suggest or disclose the invention of the Applicant, at least with respect to claim 25.

Therefore, the Applicant respectfully submits that claim 25 is not anticipated by the teachings of Moeller and, as such, fully satisfies the requirements of 35 U.S.C. § 102 and is patentable thereunder.

Furthermore, dependent claims 26-27 depend either directly or indirectly from claim 25 and recite additional features therefor. As such and for at least the reasons set forth above, the Applicant submits that claims 26-27 are also not anticipated by the teachings of Moeller. Therefore, the Applicant submits that claims 26-27 also fully satisfy the requirements of 35 U.S.C. § 102 and are patentable thereunder.

The Applicant reserves the right to establish the patentability of each of the claims individually in subsequent prosecution.

D. 35 U.S.C. § 103

The Examiner rejected claims 1-7 and 9-18 under 35 U.S.C. § 103 as being unpatentable over Erdogan et al. (U.S. Patent No. 6,211,957, hereinafter "Erdogan") in view of Favin et al., (U.S. Patent No. 5,371,597, hereinafter "Favin"). The rejection is respectfully traversed.

As Erdogan was filed March 03, 2000 and issued April 03, 2001, after the Applicant's February 13, 2001 filing date and after the Applicant's August 25, 2000 priority date, Erdogan can only be a 102(e) –type reference. Erdogan is currently assigned to Lucent Technologies, Inc., and the Applicant's invention is also assigned to Lucent Technologies, Inc. The Applicant's invention and Erdogan were, at the time the Applicant's invention was made, owned by, or subject to the obligation of assignment to, Lucent Technologies, Inc. Since this Application is a patent application filed on or after November 29, 1999, Erdogan does not preclude patentability under the provisions of 35 U.S.C.§103(c), as amended by the American Inventors' Protection Act of 1999 (see MPEP

706.02(I)(1)). Therefore, the Erdogan reference has been improperly cited against the Applicant's invention.

Furthermore, the teachings of Favin, alone, do not teach, suggest or make obvious the invention of the Applicant, at least with respect to claims 1-7 and 9-18. More specifically, the Applicant's claim 1 specifically recites:

> "A method of polarization measurement, comprising:
> (a) directing an optical signal characterized by a polarization state into a polarization controller;
> (b) directing the optical signal from the polarization controller into a polarizer;
> (c) directing the optical signal from the polarizer to a wavelength dispersive element to generate a dispersed optical signal comprising a plurality of spectral components each characterized by a wavelength range;
> (d) directing the dispersed optical signal into a photo-detector for detecting the plurality of spectral components;
> (e) setting the polarization controller to a plurality of positions;
> (f) for each of the plurality of positions of the polarization controller, measuring the power of the optical signal using the photo-detector; and
> (g) obtaining the polarization state of the optical signal by analyzing the powers of the optical signal measured in (f)."

There is absolutely no teaching or suggestion in Favin alone for a method of polarization measurement as taught and claimed by at least the Applicant's claim 1. Specifically, Favin does not teach or suggest "directing the optical signal from the polarizer to a wavelength dispersive element to generate a dispersed optical signal comprising a plurality of spectral components each characterized by a wavelength range" or "directing the dispersed optical signal into a photo-detector for detecting the plurality of spectral components" or "obtaining the polarization state of the optical signal by analyzing the powers of the optical signal measured" as taught and claimed by at least the Applicant's claim 1. In support of at least claim 1, the Applicant, in the Specification, specifically recites:

"The wavelength dispersive element 206 is used to disperse, or separate, the optical signal 250 into its spectral components within a wavelength range from λ_{min} to λ_{max}, where λ_{min} and λ_{max} denote the lower and upper wavelength limits for the spectral range of the optical signal 250. Depending on their wavelengths, different spectral components are dispersed into different angles. It should be noted that the wavelengths λ_i and λ_j are used to denote spectral components characterized by central wavelengths λ_i and λ_j, though each spectral component may further be characterized by a spectral range around the central wavelengths." (See Specification, page 6, lines 20-31).

"FIG. 3a illustrates schematically the detection of the dispersed spectral components (e.g., λ_i, λ_j, λ_k, ...) by different pixels or channels (PX_i, PX_j, PX_k, ...) of the photodiode array 208. With sufficiently high resolution, each pixel of the detector array 208 detects a portion of the spectrum of the optical signal 250, corresponding to a spectral component that is sufficiently narrow such that there is no significant change in the Stokes vector, or polarization. As illustrated in FIG. 3a, spectral components λ_i, λ_j, λ_k (each with its associated spectral range $\Delta\lambda_i$, $\Delta\lambda_j$, $\Delta\lambda_k$), are detected respectively by adjacent pixels PX_i, PX_j, and PX_k. If the Stokes vectors for the spectral components λ_i, λ_j, λ_k remain substantially constant within their respective spectral ranges, the optical powers detected by pixels PX_i, PX_j, and PX_k will correlate with the polarization parameters for the respective spectral components." (See Specification, page 8, line 30 through page 9 line 14).

In contrast to the invention of the Applicant, Favin teaches and specifically recites:

"The test set of the invention includes an optical source for generating an optical signal. A polarization controller produces a polarized input signal having one of four known polarization states. Connection means provides the polarized signal to the optical component or device under test (DUT). A power meter receives the polarized signal from the optical component under test and determines the intensity of the polarized signal out of the DUT.

A motor or similar actuator means cycles the polarization controller through the four known polarization states. A controller computes the PDL of the optical component based on the measured intensities of the polarized signals for the four known polarization states. The controller may also control the motor to change the polarization state of the input signal." (See Favin, Summary).

> "The method of the invention includes the following steps. An optical signal is polarized to produce a signal having a first known polarization state. The first polarized signal is then transmitted through the DUT to yield a first output signal. The intensity T.sub.O,a of the first output signal is measured. These steps are then repeated for second, third and fourth polarization states to yield respective intensities T.sub.O,b, T.sub.O,c and T.sub.O,d. Each of the first, second, third and fourth polarization states are unique. At least one of the polarization states is elliptical (not linear)." (See Favin, Summary).

It is clearly evident from at least the portion of the Applicant's Specification and the Applicant's claims and the teachings of Favin presented above that the invention of Favin falls far short of teaching, suggesting or making obvious the invention of the Applicant at least with regards to the Applicant's claim 1. More specifically, Favin fails to teach, suggest or make obvious at least "directing the optical signal from the polarizer to a wavelength dispersive element to generate a dispersed optical signal comprising a plurality of spectral components each characterized by a wavelength range" or "directing the dispersed optical signal into a photo-detector for detecting the plurality of spectral components" or "obtaining the polarization state of the optical signal by analyzing the powers of the optical signal measured" as taught and claimed by at least the Applicant's claim 1. Instead Favin teaches, "an optical signal is polarized to produce a signal having a first known polarization state", "the first polarized signal is then transmitted through the DUT to yield a first output signal", "the intensity T.sub.O,a of the first output signal is measured" and "these steps are then repeated for second, third and fourth polarization states to yield respective intensities T.sub.O,b, T.sub.O,c and T.sub.O,d". As such, the Applicant submits that the Erdogan reference has been improperly cited against the Applicant's invention and that independent claim 1 is not obvious with respect to Favin.

Therefore, the Applicant submits that claim 1, as it now stands, fully satisfies the requirements under 35 U.S.C. §103 and is patentable thereunder.

Likewise, independent claims 11 and 15 recite similar relevant features as those recited in claim 1. As such, the Applicant respectfully submits that

independent claims 11 and 15, as they now stand, also fully satisfy the requirements of 35 U.S.C. § 103 and are patentable thereunder.

Furthermore, dependent claims 2-7, 9-10, 12-14 and 16-18 depend either directly or indirectly from independent claims 1, 11 and 15, respectively, and recite additional features thereof. As such, and for at least for the reasons recited above, the Applicant submits that these dependent claims are also not obvious and fully satisfy the requirements under 35 U.S.C. §103 and are patentable thereunder.

The Applicant reserves the right to establish the patentability of each of the claims individually in subsequent prosecution.

E. 35 U.S.C. § 103

The Examiner rejected claims 22-24 under 35 U.S.C. § 103 as being unpatentable over Erdogan in view of Damask (U.S. Patent No. 6,377,719). The rejection is respectfully traversed.

As Erdogan was filed March 03, 2000 and issued April 03, 2001, after the Applicant's February 13, 2001 filing date and after the Applicant's August 25, 2000 priority date, Erdogan can only be a 102(e) –type reference. Erdogan is currently assigned to Lucent Technologies, Inc., and the Applicant's invention is also assigned to Lucent Technologies, Inc. The Applicant's invention and Erdogan were, at the time the Applicant's invention was made, owned by, or subject to the obligation of assignment to, Lucent Technologies, Inc. Since this Application is a patent application filed on or after November 29, 1999, Erdogan does not preclude patentability under the provisions of 35 U.S.C.§103(c), as amended by the American Inventors' Protection Act of 1999 (see MPEP 706.02(l)(1)). Therefore, the Erdogan reference has been improperly cited against the Applicant's invention.

Furthermore, as Damask was filed March 01, 2000 and issued April 23, 2002, after the Applicant's February 13, 2001 filing date and after the Applicant's August 25, 2000 priority date, Damask can only be a 102(e) –type reference.

Damask is currently assigned to Lucent Technologies, Inc., and the Applicant's invention is also assigned to Lucent Technologies, Inc. The Applicant's invention and Damask were, at the time the Applicant's invention was made, owned by, or subject to the obligation of assignment to, Lucent Technologies, Inc. Since this Application is a patent application filed on or after November 29, 1999, Damask does not preclude patentability under the provisions of 35 U.S.C.§103(c), as amended by the American Inventors' Protection Act of 1999 (see MPEP 706.02(I)(1)). Therefore, the Damask reference has been improperly cited against the Applicant's invention.

Therefore, the Applicant submits that claims 22-24, as they now stand, fully satisfy the requirements under 35 U.S.C. §103 and are patentable thereunder.

F. 35 U.S.C. § 103

The Examiner rejected claims 28-30, 32-35 and 38 under 35 U.S.C. § 103 as being unpatentable over Moeller (US Published Patent Application 09/518,296) in view of Erdogan. The rejection is respectfully traversed.

As Erdogan was filed March 03, 2000 and issued April 03, 2001, after the Applicant's February 13, 2001 filing date and after the Applicant's August 25, 2000 priority date, Erdogan can only be a 102(e) –type reference. Erdogan is currently assigned to Lucent Technologies, Inc., and the Applicant's invention is also assigned to Lucent Technologies, Inc. The Applicant's invention and Erdogan were, at the time the Applicant's invention was made, owned by, or subject to the obligation of assignment to, Lucent Technologies, Inc. Since this Application is a patent application filed on or after November 29, 1999, Erdogan does not preclude patentability under the provisions of 35 U.S.C.§103(c), as amended by the American Inventors' Protection Act of 1999 (see MPEP 706.02(I)(1)). Therefore, the Erdogan reference has been improperly cited against the Applicant's invention.

Furthermore, as Moeller was filed March 03, 2000 and published July 18, 2002, after the Applicant's February 13, 2001 filing date and after the Applicant's August 25, 2000 priority date, Moeller can only be a 102(e) –type reference. Moeller is currently assigned to Lucent Technologies, Inc., and the Applicant's invention is also assigned to Lucent Technologies, Inc. The Applicant's invention and Moeller were, at the time the Applicant's invention was made, owned by, or subject to the obligation of assignment to, Lucent Technologies, Inc. Since this Application is a patent application filed on or after November 29, 1999, Moeller does not preclude patentability under the provisions of 35 U.S.C.§103(c), as amended by the American Inventors' Protection Act of 1999 (see MPEP 706.02(l)(1)). Therefore, the Moeller reference has been improperly cited against the Applicant's invention.

Therefore, the Applicant submits that claims 28-30, 32-35 and 38, as they now stand, fully satisfy the requirements under 35 U.S.C. §103 and are patentable thereunder.

G. 35 U.S.C. § 103

The Examiner rejected claim 31 under 35 U.S.C. § 103 as being unpatentable over Moeller in view of Erdogan as applied to claims 28-30, 32-35 and 38 and further in view of Favin. The rejection is respectfully traversed.

As Erdogan was filed March 03, 2000 and issued April 03, 2001, after the Applicant's February 13, 2001 filing date and after the Applicant's August 25, 2000 priority date, Erdogan can only be a 102(e) –type reference. Erdogan is currently assigned to Lucent Technologies, Inc., and the Applicant's invention is also assigned to Lucent Technologies, Inc. The Applicant's invention and Erdogan were, at the time the Applicant's invention was made, owned by, or subject to the obligation of assignment to, Lucent Technologies, Inc. Since this Application is a patent application filed on or after November 29, 1999, Erdogan does not preclude patentability under the provisions of 35 U.S.C.§103(c), as amended by the American Inventors' Protection Act of 1999 (see MPEP

706.02(l)(1)). Therefore, the Erdogan reference has been improperly cited against the Applicant's invention.

Furthermore, as Moeller was filed March 03, 2000 and published July 18, 2002, after the Applicant's February 13, 2001 filing date and after the Applicant's August 25, 2000 priority date, Moeller can only be a 102(e) –type reference. Moeller is currently assigned to Lucent Technologies, Inc., and the Applicant's invention is also assigned to Lucent Technologies, Inc. The Applicant's invention and Moeller were, at the time the Applicant's invention was made, owned by, or subject to the obligation of assignment to, Lucent Technologies, Inc. Since this Application is a patent application filed on or after November 29, 1999, Moeller does not preclude patentability under the provisions of 35 U.S.C.§103(c), as amended by the American Inventors' Protection Act of 1999 (see MPEP 706.02(l)(1)). Therefore, the Moeller reference has been improperly cited against the Applicant's invention.

Furthermore, the teachings of Favin, alone, do not teach, suggest or make obvious the invention of the Applicant, at least with respect to claims 25 and 31. More specifically, the Applicant's claim 25 specifically recites:

> "A method of determining a polarization mode dispersion in a transmission system, comprising:
> (a) propagating a data signal characterized by a wavelength range through an optical fiber in the transmission system; and
> (b) determining the polarization mode dispersion in the optical fiber concurrent with (a) by:
> (b1) directing a portion of the data signal into a polarization analyzer;
> (b2) measuring optical powers for the portion of the data signal as a function of wavelength within the wavelength range; and
> (b3) generating polarization parameters from the optical powers measured in (b2)."

There is absolutely no teaching or suggestion in Favin alone for a method of polarization measurement as taught and claimed by at least the Applicant's

claim 1. Specifically, Favin does not teach or suggest "propagating a data signal characterized by a wavelength range through an optical fiber in the transmission system" or "determining the polarization mode dispersion in the optical fiber concurrent with" the propagating step, or "measuring optical powers for the portion of the data signal as a function of wavelength within the wavelength range" as taught and claimed by at least the Applicant's claim 25. In support of at least claim 25, the Applicant, in the Specification, specifically recites:

> "According to another aspect of the invention, the polarization analyzer 200 can be used for measurement of polarization mode dispersion (PMD) in a transmission system. In particular, it can be used as part of a PMD monitoring unit for on-line PMD measurement, concurrent with data transmission (i.e., without interrupting data transmission) in a WDM system." (See Specification, page 18 line 32 through page 19 line 5).
>
> "In the WDM transmission system 500, different transmitters (TX1, TX2, ..., TXN) are used to generate light (or optical carrier) at different wavelengths for data transmission. The carrier signals are modulated by respective data bit streams to form data signals DS1, DS2, ..., DXN. These data signals DS1, DS2, ..., DXN, having different carrier wavelengths are combined in a multiplexer 510 to form a single optical signal 580.
>
> The optical signal 580, which is illustratively, linearly polarized, is coupled into a polarization switch 502 before entering the transmission line 512. The polarization switch 502 allows the output polarization of the optical signal 580 to be varied. For example, the optical signal 580 may be switched between two non-orthogonal linear polarization states, which have a relative angle of 45° (in Jones space) with respect to each other." (See Specification, page 19, line 18 through page 20 line 1).
>
> "The polarization switch 502 and the polarization analyzer 200, which collectively form the PMD monitor 550, can be used to provide real-time, on-line PMD measurements for the transmission fiber 512. Since the signal source used for PMD measurement is provided by the transmission or data signal 580 (as opposed to an external signal source), embodiments of the invention allow PMD measurements to be performed concurrent with data transmission in the transmission system 500, without interrupting data transmission." (See Specification, page 21, lines 9-18).

In contrast to the invention of the Applicant, Favin teaches and specifically recites:

> "The test set of the invention includes an optical source for generating an optical signal. A polarization controller produces a polarized input signal having one of four known polarization states. Connection means provides the polarized signal to the optical component or device under test (DUT). A power meter receives the polarized signal from the optical component under test and determines the intensity of the polarized signal out of the DUT.
>
> A motor or similar actuator means cycles the polarization controller through the four known polarization states. A controller computes the PDL of the optical component based on the measured intensities of the polarized signals for the four known polarization states. The controller may also control the motor to change the polarization state of the input signal." (See Favin, Summary).
>
> "The method of the invention includes the following steps. An optical signal is polarized to produce a signal having a first known polarization state. The first polarized signal is then transmitted through the DUT to yield a first output signal. The intensity T.sub.O,a of the first output signal is measured. These steps are then repeated for second, third and fourth polarization states to yield respective intensities T.sub.O,b, T.sub.O,c and T.sub.O,d. Each of the first, second, third and fourth polarization states are unique. At least one of the polarization states is elliptical (not linear)." (See Favin, Summary).

It is clearly evident from at least the portion of the Applicant's Specification and the Applicant's claims and the teachings of Favin presented above that the invention of Favin falls far short of teaching, suggesting or making obvious the invention of the Applicant at least with regards to the Applicant's claim 25. More specifically, Favin fails to teach, suggest or make obvious at least "propagating a data signal characterized by a wavelength range through an optical fiber in the transmission system" or "determining the polarization mode dispersion in the optical fiber concurrent with" the propagating step, or "measuring optical powers for the portion of the data signal as a function of wavelength within the wavelength range" as taught and claimed by at least the Applicant's claim 25. Instead Favin teaches, "an optical signal is polarized to produce a signal having a first known polarization state", "the first polarized signal is then transmitted

through the DUT to yield a first output signal", "the intensity T.sub.O,a of the first output signal is measured" and "these steps are then repeated for second, third and fourth polarization states to yield respective intensities T.sub.O,b, T.sub.O,c and T.sub.O,d". As such, the Applicant submits that the Erdogan and Moeller references have been improperly cited against the Applicant's invention and that independent claim 25 is not obvious with respect to Favin. Therefore, at least because Favin does not make obvious the Applicant's invention with respect to claim 25, the Applicant's further submit that Favin also does not render obvious the Applicant's claim 31, which depends from independent claim 25 and recites additional features thereof.

Therefore, the Applicant submits that claim 31, as it now stands, fully satisfies the requirements under 35 U.S.C. §103 and is patentable thereunder.

The Applicant reserves the right to establish the patentability of each of the claims individually in subsequent prosecution.

H. 35 U.S.C. § 103

The Examiner rejected claims 36 and 37 under 35 U.S.C. § 103 as being unpatentable over Moeller in view of Erdogan as applied to claims 28-30, 32-35 and 38 and further in view of Damask. The rejection is respectfully traversed.

As Erdogan was filed March 03, 2000 and issued April 03, 2001, after the Applicant's February 13, 2001 filing date and after the Applicant's August 25, 2000 priority date, Erdogan can only be a 102(e) –type reference. Erdogan is currently assigned to Lucent Technologies, Inc., and the Applicant's invention is also assigned to Lucent Technologies, Inc. The Applicant's invention and Erdogan were, at the time the Applicant's invention was made, owned by, or subject to the obligation of assignment to, Lucent Technologies, Inc. Since this Application is a patent application filed on or after November 29, 1999, Erdogan does not preclude patentability under the provisions of 35 U.S.C.§103(c), as amended by the American Inventors' Protection Act of 1999 (see MPEP

706.02(l)(1)). Therefore, the Erdogan reference has been improperly cited against the Applicant's invention.

Furthermore, as Moeller was filed March 03, 2000 and published July 18, 2002, after the Applicant's February 13, 2001 filing date and after the Applicant's August 25, 2000 priority date, Moeller can only be a 102(e) –type reference. Moeller is currently assigned to Lucent Technologies, Inc., and the Applicant's invention is also assigned to Lucent Technologies, Inc. The Applicant's invention and Moeller were, at the time the Applicant's invention was made, owned by, or subject to the obligation of assignment to, Lucent Technologies, Inc. Since this Application is a patent application filed on or after November 29, 1999, Moeller does not preclude patentability under the provisions of 35 U.S.C.§103(c), as amended by the American Inventors' Protection Act of 1999 (see MPEP 706.02(l)(1)). Therefore, the Moeller reference has been improperly cited against the Applicant's invention.

Even further, as Damask was filed March 01, 2000 and issued April 23, 2002, after the Applicant's February 13, 2001 filing date and after the Applicant's August 25, 2000 priority date, Damask can only be a 102(e) –type reference. Damask is currently assigned to Lucent Technologies, Inc., and the Applicant's invention is also assigned to Lucent Technologies, Inc. The Applicant's invention and Damask were, at the time the Applicant's invention was made, owned by, or subject to the obligation of assignment to, Lucent Technologies, Inc. Since this Application is a patent application filed on or after November 29, 1999, Damask does not preclude patentability under the provisions of 35 U.S.C.§103(c), as amended by the American Inventors' Protection Act of 1999 (see MPEP 706.02(l)(1)). Therefore, the Damask reference has been improperly cited against the Applicant's invention.

Therefore, the Applicant submits that claims 36 and 37, as they now stand, fully satisfy the requirements under 35 U.S.C. §103 and are patentable thereunder.

Applicant's Note

The Applicant would like to thank the Examiner for the indication of allowable subject matter, however, the Applicant submits that at this time all of the Applicant's claims are allowable over any properly cited prior art references submitted by the Examiner.

Conclusion

Thus the Applicant submits that none of the claims, presently in the application, are anticipated under the provisions of 35 U.S.C. § 102 or obvious under the provisions of 35 U.S.C. § 103. Furthermore, the Applicant also submits that all of these claims now satisfy the requirements of 35 U.S.C. § 112. Consequently, the Applicant believes that all these claims are presently in condition for allowance. Accordingly, both reconsideration of this application and its swift passage to issue are earnestly solicited.

If however, the Examiner believes that there are any unresolved issues requiring adverse final action in any of the claims now pending n the application, it is requested that the Examiner telephone Jorge Tony Villabon, Esq. at (732) 530-9404 x 1131 or Eamon J. Wall, Esq. at (732) 530-9404 so that appropriate arrangements can be made for resolving such issues as expeditiously as possible.

Respectfully submitted,

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Dated: 2/2/04

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